

**Form A:** For consideration by the relevant Faculty Education Committee

## **Allocation of ECTS credits to assessed academic activities taken outside of term-time**

### **Departmental Model for internal UROP or external internship (or other assessed “research experience”) or curriculum related activity external to the College to carry ECTS credits**

Departments wishing to award credits for academic activities undertaken in vacations (e.g. UROP projects, internships) should outline, using [Form A \(also included below\)](#), the broad nature of the programmes their students may undertake on the form below for approval by their Faculty Education Committee.

Once approval is given, Departments should work within the agreed framework to agree the detail of individual student’s programmes, which will require approval by the Director of Undergraduate Studies on behalf of the Departmental Teaching Committee.

The Departmental Teaching Committee is responsible for ensuring that the general criteria agreed by the Faculty Education Committee are fulfilled and must notify Registry (Student Records) of approved placements (ostensibly using [Form B](#), or by use of an equivalent datasheet) before the activities occur, and in due course also communicate to Registry (and before the end of the degree programme) the outcome of the relevant assessment, in order that the ECTS allocation is validated (with reference being made, as a note, to the student’s transcript).

When completing this form, Departments are reminded of the following key principles:

- Each placement (including time allocated for assessment) must be a **minimum of 6 weeks** (225 hours and 9 ECTS Credits) full-time (or part-time equivalent) and should last no longer than 12 weeks (18 ECTS Credits) full-time (or part-time equivalent); typically, placements will last for 10 weeks and carry 15 ECTS Credits;
- **1.5 ECTS credits** will be awarded for each **full-time working week** (this assumes a 37.5 hour full-time week, or part-time equivalent);
- Each activity must be primarily **academic in nature**;
- Registration of individual students for additional ECTS credits must be completed before the student commences the placement. Retrospective registration will not be accepted.

Name of Department: **Physics**

### **Section A: Learning Outcomes**

#### **Knowledge and understanding**

The student will gain knowledge and understanding of:

- working towards a topical and important research goal in a state-of-the-art academic research environment. The project is likely to involve a degree of team work and interaction not only with the academic research supervisor but also PhD and post-doctoral co-workers within their research group.
- the research methods and practices appropriate to the specific area of research being investigated. The design of experiments including the design of appropriate control experiments. The scientific approaches employed and the manner in which data is accumulated and analysed.
- an understanding of ethical aspects of the work being conducted particularly relating to the manner in which results are disseminated within the context of related work in the field.
- the significance of the work in the wider context of extending scientific knowledge and the potential direct and indirect beneficiaries of that knowledge.

### **Section B: Skills and Other Attributes**

#### **Intellectual Skills:**

The student will learn:

- how to plan, design and carry out experiments, to assess the hazards associated with these experiments and mitigate these, and to analyse all data obtained. Specifically, these skills will vary significantly depending on the area of physics being investigated but will include the ability to maintain an accurate and detailed account of their work in a lab book and, where appropriate, the particular issues associated with work with lasers and other

<p>optical equipment, clean rooms, hazardous substances, plasma equipment, radioactive materials, etc.</p>
<ul style="list-style-type: none"><li>• how to interpret data obtained in experiments. This could require a deep knowledge of a particular measurement technique appropriate to an area of physics. Alternatively, it could require an intimate knowledge of a software package for (e.g.) the simulation of physical problems or the analysis of data or study of a branch of mathematical physics.</li><li>• how to present their research results in both oral and written form. This will entail understanding the background work that has led up to the work carried out during the placement and how the results obtained during the placement advance knowledge in the field.</li></ul>
<p><b>Practical Skills:</b></p>
<p>The student will learn:</p>
<ul style="list-style-type: none"><li>• technical skills relevant to the placement. These could include the ability to set up and align optical components, the ability to program in various computer languages (e.g. Java, HTML), and the ability to prepare samples (e.g. by MBE)</li></ul>
<ul style="list-style-type: none"><li>• How to operate various pieces of equipment associated with the correct functioning of the lab(s) in which they are situated. These could include lasers, clean room and vacuum equipment.</li></ul>
<p style="text-align: center;"><b>Section C: Transferable Skills</b></p>
<p>The student will develop:</p>
<ul style="list-style-type: none"><li>• their CV. Participation in an assessed UROP project will allow the student to demonstrate their initiative and strategic planning for their career.</li></ul>
<ul style="list-style-type: none"><li>• their interview and communication techniques. As part of most UROP projects within the Department of Physics, participating students will be required to present the results of their research to small group seminars and research update meetings which may be attended by scientists from other related disciplines etc.</li></ul>
<ul style="list-style-type: none"><li>• their ability to work within teams. As part of most UROP projects within the Department of Physics, participating students will be required to work within a</li></ul>

team of researchers where communication is paramount to the success of the project.

- independent learning. Ultimately, the success of almost all research projects distills down to the creativity and ingenuity of the researcher conducting the experiment and the participating UROP student will be expected to hone their ability to observe and draw conclusions from these observations in an independent manner.

### **Section D: Assessment Criteria**

*Departments are reminded that students must, as a minimum, write a report or reflective journal of their experience and present their findings orally. The report would typically be at least 2000 words (2-4 sides) and the oral presentation should cover description/discussion of the following:*

- a) the aims and objectives of the placement*
- b) the activities carried out*
- c) achievements*
- d) the extent to which the planned learning outcomes were met*
- e) critical reflection*

*The criteria for passing the assessment should be transparent and clarified prior to the start of the placement. Departments are reminded that these activities are only for pass or fail.*

*The supervisor will be required to certify that the student has undertaken a fixed number of hours per week. If the activity is undertaken outside the work environment, the supervisor will be required to provide details of how the student was supervised. The supervisor will also be required to assess the student together with another member of staff.*

The following will be prepared for the UROP project.

For UROP projects carried out in the Department of Physics or under the supervision of a member of academic staff of the Department of Physics the student and supervisor are required to:

- 1) prepare a 1 page research plan prior to the start date of the project. This document must state the exact duration of the project, the minimum number of hours the student is expected to devote to the project and the concomitant ECTS credit expectation (typically 15 ECTS for a 10 week@37.5 h/week project, see above), the location of the work and the day- to-day supervision arrangements for the entire period. It should also briefly outline the aims and objectives of the study and the expected learning outcomes for the student. This plan should be signed off by the supervisor(s), the student and the Director of Undergraduate Studies (DUGS) before

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the project starts.

- 2) complete a 'day one induction' safety assessment for work in the appropriate lab..
- 3) submit a 2-4 page research project summary of the research carried out within 1 month of the end of the project. The report should contain the elements (a)-(e) listed above and be submitted to the DUGS who will arrange for it to be independently assessed by an independent member of the Departmental Academic Staff
- 4) arrange for the student to give a 20 min presentation of the results of the research to a suitable group of postgraduate students and staff (e.g. the relevant research group) and an independent member of the Departmental Academic Staff.

Name: Dr Robert J Forsyth

Title: Director of Undergraduate Studies

Date: 7<sup>th</sup> June 2018

Please submit the completed form to the appropriate Faculty Education Committee:  
<http://www.imperial.ac.uk/about/governance/academic-governance/faculty-and-departmental-governance/>

Updated by the Quality Assurance and Review team (May 2017) to reflect Committee changes; links and action around use of Form B or an equivalent.